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S E C T. I.

Account of New Books.

I.

Dissertatio Medica Descriptionem et Casus aliquot Osteomalaciæ sistens, Auctore Olao Jacobo Ekman, Præsidente Joh. Gust. Acrell. 4to, Upsaliæ.

THE treatise before us is introduced with some general observations on the nature and properties of bones in the healthful state, as possessing greater solidity and strength than other parts, and thus preserving the length and form of the animal machine. There are, however, Dr Ekman observes, melancholy instances,

in which they do not acquire a sufficient degree of firmness in the womb itself; there are others, in which they have not a due degree of growth in the infant state; and lastly, there are cases, in which, after having acquired the proper strength of the adult state, they are so affected from internal causes, as to be either fractured from the slightest accident, or so softened as to be incapable of resisting the action of the muscles; in consequence of which, various deformities occur.

This disease, he observes, is described under various names by different medical writers. The term *Rachitis* has indeed been most frequently employed. But with some, the disease has obtained the names of *Atrophia*, *Osteosarcosis*, *Ossium fragilitas*, *mollitio*, *incurvatio*, *contorsio*, and the like. As affecting particular parts, it has been termed, *Gibbositas* or *Scoliasis*; and those labouring under it have been styled *Capitones*, *Valgi*, *Vari*, *Combernes*, &c. This affection of the bones has also, he observes, been sometimes considered as conjoined with certain chronic diseases, as *scrofula*, *scorbutus*, and *syphilis*, which were believed to affect the bones in consequence

consequence of a certain acrimony, or peculiar miasma.

In his inquiries on this subject, Dr Ekman thinks it most advisable, to refer the whole to one genus, of which the proper and distinguishing characteristic is, a weaker, more fragile, or softer structure of the bones, from which they either acquire monstrous figures, in consequence of the ordinary actions of the muscles, or are broken by the slightest violence, or, in fine, are reduced to such a pulp, that all voluntary motion is lost. He employs the generic name of *Osteomalacia*, as none of the others in use sufficiently distinguish this disease from other affections of the solids. This genus may, he thinks, with propriety be distinguished into four species :

1. *Osteomalacia congenita, vel Hereditaria.*
2. *Osteomalacia infantum, seu Rachitica.*
3. *Osteomalacia adultorum, vel Cachectica.*
4. *Osteomalacia partialis.*

Of each of these species he next proceeds to make some observations, illustrating them by particular cases.

In treating of the *first* species, the Osteomalacia congenita, he observes, that an uncommon softness of the bones may not only occur from the very time of birth, but that it has even been known to be propagated through different generations, from parents to children. In proof of this, he relates the history of a family, residing at one of the iron mines in Sweden, who for three generations were known to be a race of dwarfs, with a peculiar softness and fragility of the bones, giving rise to monstrous distortions. The great-grandfather of this monstrous progeny, by name Nicolas Ekroth, was born in the end of the last century, and was so distorted in his figure as to be incapable of walking. But, even in this situation, he entered into marriage, and had by his wife four children.

1. Eric, born in 1702, who in the infant state shewed no signs of deformity. But having arrived at puberty, he lost all strength of his legs and arms; and being incapable of any work, he was supported by begging. He died in 1775.

2. Sophia, born in 1703. Of her, during the infant state, there are no certain accounts.

But,

But, when grown up, she was of a low and crooked stature, walked in the manner of a duck, and had her feet turned inwards.

3. Anna, of whom nothing certain is known, and who probably died early in life, or removed to some other part of the country.

4. Stephen, well known to all the neighbourhood as a dwarf, incapable of walking, and with remarkable curvatures both in his legs and arms. Notwithstanding this deformity, however, he married a healthy woman, by whom he had one son.

This son, named Nicolas Ekroth, who constitutes the second generation, was born in the year 1726. From the earliest period of his life, both his legs and arms were liable to be broken, even by the slightest injury; and, like his father and grandfather, he was miserably distorted, and was obliged to remain almost constantly in a sedentary state. He also was chiefly supported by begging, and died in the 56th year of his age. Through the whole course of his life, he was affected with flying pains in different parts of his body. But, notwithstanding these circumstances, he married a stout looking woman, by whom he had

two children ; which constitute the third generation from the elder Nicolas.

The first of these, Andrew Ekroth; was born in the year 1760. When he was scarce a month old, such was the softness of the bones of his legs and arms, that a curvature was the consequence even of the slightest touch ; and, almost every year during the infant state, he was three or four times subjected to a fracture of some bone. When he was grown up, his legs were incapable of supporting the weight of his body, although very light ; and by various and almost innumerable contortions and fractures, both of the inferior and superior extremities, he exhibited a most miserable spectacle. The articulations, however, were not affected with any disease. When he arrived at maturity, though he was not married, yet he was by no means void of the desire of propagating the species ; and perhaps he might have succeeded in obtaining a wife, had he not been accidentally drowned.

The second child of Nicolas Ekroth, named Anna, born in the year 1765, was alive in the year 1788, at which time she was seen by our author. Her mother informed him, that eight
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days after her birth, when they were changing the linens of this infant, her arm was broken without any violence whatever; and during the whole period of infancy, upon the slightest accident, fractures occurred, not only in the legs and arms, but even in the thigh bones. These were accompanied with such distortions in the other bones, that at the age of fourteen she measured only nineteen inches and a half in length. But the power of motion at all her joints was very free. In the twenty-third year of her age, at which time Dr Ekman saw her, she had never menstruated, and was very thin. But notwithstanding the affections of all the other bones, the head retained its natural figure.

It deserves to be remarked, that the family thus affected, lived in different situations; and the greater part of them lived in the same manner with other labourers in the neighbourhood, who begot very healthy children.

After this remarkable account of the Osteomalacia congenita, Dr Ekman next treats of the *second* species, the Osteomalacia infantum, seu Rachitica. This disease, peculiar to infants, is, he observes, so well described

by practical authors, that any farther history of it becomes unnecessary. He admits, that, as well as the former, this also may be congenital, or, at least, that predisposition to it may be propagated from parents to children. But he contends, that occasional causes have great influence in producing it. In the beginning, it is often without fever ; but in the progress of the disease, febrile symptoms supervene, and it is often terminated by convulsions. On dissection after death, the bones are often in such a soft state, that they may be cut like wax ; the texture of the muscles, also, appears to be very lax and tender ; and some of the abdominal viscera, particularly the liver, are not unfrequently found to be very much enlarged.

The *third* species pointed out by Dr Ekman, is styled the Osteomalacia adultorum, seu Cachectica. This, though mentioned by several writers, from its singular and wonderful appearance, has not however been considered as belonging to a genus of disease by itself, but has been viewed as symptomatic merely of lues venerea, scrofula, scorbutus, or the like. This disease, however, he observes, takes its rise in instances where there cannot
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be even the slightest suspicion of any latent fomes. After enumerating the most remarkable cases of this affection, recorded by Rivinius, Meibomius, Fernellius, Hollerus, Morand, Lambert, Petit, Herissant, Waldschmidt, Thomson, Cowper and others, he remarks, that before any affection of the bones has been observed, the patient is in general excruciated with very severe pains, supposed to be of the athritic, rheumatic, or syphilitic kind; but without any good reason. With these pains, whether more or less severe, a fever is conjoined; and at the same time, a large quantity of earthy or calcareous matter, unquestionably furnished from the substance of the bones, is discharged with the urine. The longer this excretion continues, the more the bones are softened, not only of the limbs and spine, but also of the cranium and face. In this situation, the bones are broken and distorted, not merely by the weight of the body, but even by the ordinary action of the muscles.

Notwithstanding the cases of this disease recorded by other writers both of ancient and modern date, Dr Ekman thinks, he performs no unacceptable task to his readers, by recording

ording another example of it, which, he imagines, throws great light on the nature of this affection. While many of the other cases occurred with patients in inferior ranks of life, and under suspicious circumstances, this again occurred with a lady in such opulence as to be furnished with every comfort and convenience, and of unimpeachable virtue.

She was a female of a delicate frame, and fine skin; but had enjoyed good health till the twenty-seventh year of her age, and was the mother of two healthy children. In the year 1773, towards Autumn, she became affected with a severe cough, which was even attended with hectic fever, and purulent expectoration: but after the space of five months, in consequence of the use of proper remedies, this alarming affection was completely overcome, leaving, however, in the right mamma a scirrhus about the size of an almond. During the following year she enjoyed but indifferent health; and the scirrhus increased to about the size of a pigeon's egg, being affected with obtuse pain, particularly during the night. In the Summer of 1775, she was attacked with a peculiar fever, attended with an erysipelatous,
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or scarlet eruption, and some degree of sore throat, with difficult deglutition. These yielded to the antiphlogistic treatment; but she still complained of distressing pains in her arms and legs, returning at intervals through the whole year.

In the year 1776, and nearly about the same time as in the former year, a fever very similar to that with which she had before been affected, again attacked her. It was attended with an eruption, which however disappeared in the space of three or four days. But a much greater degree of weakness remained, with such an affection of the legs and arms, that she was frequently afraid some of them were broken. She now also became affected with constant pains of the legs and arms, which, conjoined with fever, confined her to bed for the space of three weeks. When, after being a little recovered, she attempted to rise, she had scarcely put her left foot on the floor, before she felt a crackling at the articulation of the thigh bone, and fell back into the arms of an attendant. Upon examination it was found, that the *os femoris* was fractured at its neck. After this she was confined to bed for

near three months; and during all that time severe pains continued, particularly in the right arm, right side of the face, and eye of the same side.

In the year 1777, the fracture seemed to be pretty firmly united; but a new and unusual mechanism had taken place. The right eye was subjected to constant inflammation, and the antrum maxillare so distended, as to set the face awry. The vertebræ of the neck were rigidly incurvated, so that the head was bent towards the thorax. The vertebræ of the back were formed into a hunch, so that the body was shortened about ten inches. The right tibia was so deprived of strength, that upon merely lifting the foot, the leg was evidently bent. The lymphatic glands in different parts of the body, particularly in the neck, mammæ, and axilla, were enlarged and indurated. This year also, and about the same season, she was attacked with her usual fever, attended with the ordinary exanthematous appearances. Such was the fragility of her limbs, that she durst not attempt to stand, but was obliged either to ly or sit. A very great quantity of a white coloured calcareous sediment

ment was constantly excreted with the urine ; and through the whole of this period she complained of an unusual sense of heat, which both night and day affected the internal parts of her body. In her bed-chamber, while others complained of cold, she felt pleasant. Winter was always agreeable to her ; and she was highly distressed by Summer weather.

In the year 1778, to her other affections, and to an increase of the distortions, was superadded a new disease of the kidneys, consisting in violent pain, attended with the discharge of numerous calculi, her urine still continuing to deposite the same calcareous sediment as before. During this fourth year, also, she did not escape her usual fever ; and although it suffered a remission in a few days, yet it did not entirely leave her. A diarrhœa supervened, attended with apithæ, which proved fatal to her. Various circumstances prevented an examination of the body after death. Dr Ekman thinks, however, there can be little doubt, that nothing farther would have been detected than was observed by Dr Hunter on the dissection of the patient affected with remarkable softness of the bones, whose case is related by Mr
Thomson,

Thomson, in the fifth volume of the London Medical Observations.

The *fourth* species of this disease, described by Dr Ekman, he styles the Osteomalacia partialis. Under this title he considers that affection, which, either with or without a preceding bad habit of the body, arises from a local cause, by means of which, some one of the bones is deprived of its usual hardness, and degenerates into a soft, fleshy, cartilaginous, or steatomatous substance, or is even rendered so fragile, as to break either of its own accord, or in consequence of the slightest accident. This, in the writings of practical authors, has been described under the names of Osteofarcosis, Caries from an internal cause, and the like.

From an attentive consideration of this affection, it will be found, our author thinks, constantly to derive its origin from some preceding external violence, by which the vessels leading to the affected part, serving for nutrition, are so changed, that they cannot convey a sufficient quantity of properly prepared osseous matter; while, at the same time, the absorbents continue to exert their usual functions,

tions, carrying off the accustomed quantity of bony substance. By this means, the bone is either bent, broken, or distended ; or changed into a soft substance very different from bone.

Of this affection, Dr Ekman remarks, that several cases had occurred to him ; and of these he relates the following, as illustrating the nature of the disease. A young country man, in a state of perfect health, was by accident thrown from a sledge upon the ground, when covered with ice and snow, and his knee very much hurt. The pain and swelling of his thigh and knee, which were thus induced, continued for several weeks ; during which time, different external applications were employed. He at length recovered perfect health, excepting a slight weakness in the knee, which was apt to be fatigued upon motion ; and he continued in this state till the middle of Summer. But at that time, without any new accident, he was seized with obtuse pain in the knee and leg, by which he was confined to bed for several weeks. The thigh now began to swell ; but the knee became emaciated, and a very large tumour took place

place on the foot. He became affected also with hectic fever.

After he had been thus distressed for some length of time, when he was attempting one night to extend his leg in bed, he broke the tibia, just below the epiphysis at the knee. Upon this, new pain, fever, and suppuration ensued; and, upon an opening being made to discharge the pus, the fracture of the bone could be evidently distinguished. Amputation was now considered as the only thing that gave a chance of saving his life; but he died in a few days.

After thus describing the different forms under which this disease appears, Dr Ekman concludes this treatise with some observations on the nature of each. With regard to the *first*, or Osteomalacia congenita, he observes, that nothing has more eluded the researches of physiologists than the business of generation. No one, however, can deny, that chronic affections are often transferred from parents to children; and this, he thinks, certainly depends, not on any peculiar acrimony of the blood, but on a vitiated configuration of the living solids. Some learned men have supposed,

supposed, that hereditary diseases are propagated only from the mother ; but the histories which our author has related of this first species of osteomalacia, prove that the disease was propagated by the father through three successive generations.

When foreign stimuli, acting for a great length of time, excite morbid actions in the body, a due degree of nutrition cannot then take place, and the bones cannot acquire the necessary firmness, chiefly for two reasons. In the *first* place, Not only is the appetite for food impaired, but the whole business of digestion is disturbed ; and, in the *second* place, from the influence of such stimuli, the equable and determinate action of the arterial vessels, so necessary for performing due apposition, is not merely disturbed, but even sometimes entirely suspended. But while, in this manner, the assimilation and apposition of nourishment is diminished, the business of absorption often goes on undisturbed ; and thus, of necessity, a greater proportion of the solids of the body is carried away than deposited. At the period, however, during which the osteomalacia infantum, or rachitica, occurs, such

a condition is the more dangerous, as a large ap-
position is necessary for the growth of the body.
There are, however, Dr Ekman thinks, various
stimuli of this nature to which the infant body
is exposed ; and, as such, he enumerates affec-
tions of the alimentary canal, with depraved
digestion, arising from bad milk, large quanti-
ties of unfermented farina, and other food of
difficult digestion, ill fitted to the tender sto-
machs of infants. Such stimuli are also afford-
ed by want of cleanliness on the surface, her-
petic eruptions, excoriations, and the like.
These, he remarks, are generally allowed to
be the occasional causes of rachitis ; and all of
them, he thinks, act upon the body by a long
continued stimulus, retarding digestion.

The osteomalacia cachectica, seu adutorum,
is, Dr Ekman thinks, also to be explained
from the influence of long continued stimuli,
which appears from its being universally pre-
ceded by long continued pains, almost univer-
sally extended over the whole body. From
the affection of the lymphatic glands, which
generally occurs in this disease, some authors
have supposed a scrofulous humour to pre-
vail. But this affection of the glands takes
place

place only after calcareous matter has been observed in the urine. It is therefore, Dr Ekman thinks, clearly to be attributed to the action of this matter on the glands, and is to be considered as the consequence, not the cause, of the osteomalacia. From this view of the disease, he entertains the hope, that in process of time, some stimulus may be discovered, by which those inducing osteomalacia may be counteracted, in the same manner as the syphilitic stimulus is known to be extinguished by that of mercury.

That no particular acrimony takes place in the osteomalacia partialis, clearly appears, our author thinks, from the cartilages never being affected, although the substance of a neighbouring bone be entirely dissolved. It is therefore, he thinks, wholly to be referred to the action of a local cause, in the manner formerly explained; and, where the situation of the part will admit of it, amputation may be considered as the most effectual cure.

